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USEFULNESS OF THE POLYMERASE CHAIN REACTION IN THE DIAGNOSIS OF TYPHOID FEVER

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Typhoid fever remains one of the important infective febrile illnesses in many parts of Sri Lanka, including Jaffna. Blood culture is the gold standard for laboratory diagnosis of typhoid fever, but it is time consuming and the manual blood culture system has poor sensitivity. Serological tests have low sensitivity and specificity in the typhoid endemic areas because of the continuous exposure to related antigens. Therefore, a rapid, reliable detection method with high sensitivity and specificity would be of value for the diagnosis of typhoid fever. This study was carried out to identify *Salmonella typhi* isolates by the polymerase chain reaction (PCR) and to determine the usefulness of PCR on blood culture media in the diagnosis of typhoid fever.

Febrile patients from the medical and paediatric wards of the Teaching Hospital Jaffna with clinically suspected typhoid fever during January 2012 to July 2013 were recruited with consent. Blood cultures were done by the manual method and the culture medium was collected after 7 days of incubation and stored at -20°C. All the Salmonella isolates were biochemically and serologically identified using specific anti-sera. Nested PCR was carried out using the blood culture isolates of *S. typhi* and blood culture medium targeting the flagellin gene of *S.typhi*. Primers ST1 and ST2 were used in the first round of PCR and ST3 and ST4 were used in the second nested round of PCR. PCR products were then visualized using agarose gel electrophoresis.

Eighteen of 260 blood cultures yielded *S. typhi.* All 18 isolates were identified by nested PCR as *S.typhi*. Of the 70 stored blood culture media, 7 were from *S. typhi* positive blood cultures and 63 were from negative blood cultures. Of the 7 positive blood culture media only 2 were positive by PCR and of the 63 negative blood culture media, 3 were positive by PCR for *S. typhi*. Although PCR can be carried out in laboratories with facilities for molecular biology, the low positivity in patients whose blood cultures were positive for *S.typhi* needs an explanation. The role of PCR in the early diagnosis of typhoid therefore needs to be investigated further before recommendations for its use can be made.

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